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ABSTRACT

A discussion is presented of the value and benefits of using questions in the classroom that will develop the critical thinking abilities of students. Some of the benefits of employing questions in classroom teaching are related to the affective domain, being psychological in nature, some are evaluative in that they provide clues to the extent of students' knowledge, while others may have cognitive aspects, such as directing the thinking of the student into new, previously unconsidered, areas of thought. Some rules for effectively using questions are offered, as well as guidelines or recommendations for various classroom situations. Included in this discussion is a consideration of the different categories of questions, classified as "collective" (directed to the entire class), "direct" (directed to an individual), and "rhetorical" (posed to the entire class with no response expected). A brief overview is presented of some research that has been accomplished on the use of questions in classroom teaching. (JD)

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QUESTIONS CONCERNING QUESTIONS IN THE CLASSROOM

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QUESTIONS CONCERNING QUESTIONS IN THE CLASSROOM

Questions may constitute the very essence of modern classroom teaching. In recent years educators have begun to recognize the great importance of this aspect of teaching and an increased volume of research has resulted. One researcher found that thirty-six percent of all remarks made by teachers were not answered by students at all, and that on the average the teachers asked one question every seventy-two seconds.[1] Unfortunately, it appears that most questions are factual, and rely on memory for answers, are not thought-provoking, and rarely analytical. Teachers commonly respond to their own questions as if saving time was the important aspect, plus assurance to the students of hearing the right answers. Many classroom questions require only "yes" or "no" answers while others are never answered at all by anyone.

Classroom observations by this writer indicate that approximately half of the time utilized teaching students in groups is spent with questions and their answers. One wonders why teacher-educators use so many hours teaching methods and materials without giving proportionate time to the development of this skill which is the most time-consuming of all of the activities in a formal learning situation. There is evidence which indicates that students learn better when questions are used and especially if the questions are oral and of the right type, that is, thought provoking. The higher-inquiry questions produce a greater change in students and motivate them to engage in critical thinking and to discover information for themselves.

One writer in a recent article compared the process of using questions in a classroom to a practice session with a group of baseball players.[2] Presumably

the instructor "bats out" an appropriate question, and like a baseball, it flies from glove to glove, or person to person, until an acceptable response is obtained, or at least, until satisfaction with the question itself has been reached.

There is historical and theoretical basis for the current, increased interest in the art of teaching by the means of questioning. Held by many authorities to be a master teacher, Socrates of Athens, employed questions almost exclusively in his instruction. What is this so-called Socratic Method?[3] The method has two parts, namely the definition followed by the dialectic, which means that the Socratic instructor will first define the terms used and then engage in the "give and take" of answers and further questions until the desired goal has been attained. In the case of Socrates, of course, the method simply revealed that no concrete knowledge had been achieved .

The great Aristotle, teacher of Socrates' pupil, Plato , also emphasized the importance of questions. In addition to becoming the founder of systematic logic, Aristotle indirectly promoted questions through his emphasis on contemplation, the concern for determining differences when categorizing flora and fauna, with his writings on values, ethics, wisdom, justice, and in general by his spirit of independent inquiry. Modern followers of the great classical realist have frequently been known to insist that each student must be intellectually able to ask the right questions or he cannot expect the correct answers. Should he pose a question which he thinks is the one he wants answered, and it is not, to whatever degree, then to that extent the student has mislead himself and may go through life with error in his mind. Questions must be asked, then, that are the direct result of a need, must employ the proper terms, and be of the right intensity, or inaccuracy in answering is the result.

The right question brings the right answer and the student thus moves from potentiality to actuality, to use Aristotle's language. In addition to the contributions of Socrates and Aristotle, some modern day educators have also added to the theory of teaching by questions. For example, one recent article suggested the following:

> Higher cognitive questioning includes the process of analysis, synthesis, and evaluation. It is a direct application of Piaget's and Dewey's theories in that they reject the teaching of only prescribed subject matter by rote learning.[4]

Piaget's theory of cognitive development and John Dewey's philosophy of Progressive Education both promote the notion that the learner is an active part of the learning process. Further, these theories hold that the learner is constantly interacting with his environment, developing his cognitive skills as he seeks to resolve real problems. This means then that every student, in keeping with his potential ability, must involve himself in critical thinking with the help of a skilled teacher, if he is to become truly educated. It should be obvious that teaching by questions is long on history, and development in theory, but short on classroom training and practice.

I. Values in the Use of Questions in the Classroom

Some of the benefits of employing questions in classroom teaching are related to the affective domain; they are psychological in nature. Questions do the following:

1. Arouse interest and develop curiosity since they involve students directly in the learning process.
2. Motivate students, especially those "isolates" who may be too timid otherwise to speak up in class but who will respond to direct questions.

3. Gain the attention of students, particularly those whose minds tend to wander.
4. Provoke discussion, which on occasion, is more productive than lectures.
5. Develop rapport and create a degree of spontaneity.[5]

The using of questions in the classroom also has evaluative aspects. Questions:

6. Indicate the level of knowledge and understanding of the students.
7. Determine if the learners have completed their assignments such as required reading library work, textual exercises or simply thought about the lesson material.[6]

Finally, there are cognitive aspects in the use of classroom questions. These goals are:

- To direct the thinking of the students so as to erect a basis for further learning.
- To relate proposed new learning to that already acquired.
- To restate, review, and summarize previously learned material, which is most necessary after a vacation period.
- To expose misconceptions and resolve difficulties students may have, knowingly or unknowingly.
- To develop the skill of critical, evaluative thinking, and an understanding of relationships between ideas.

II. Rules and Recommendations for the Use of Questions in the Classroom

There are some definite rules that a good classroom teacher would follow when teaching by means of questions. In addition, there are guidelines or recommendations which vary, depending on the individual situation. Here are the rules:

1. Classroom teachers should select carefully the questions needed for each class session. The choice of questions must be part of the lesson plan. Unplanned questions may result in the following: How does one use a sharp knife? Answer, Carefully. What about great educators? Answer, what about them? Can you speak on this subject? Answer, Yes.[7]
2. Do not use questions which arouse antagonism, or which make undesirable implications, such as remarks negative to minorities.
3. Keep questions geared toward the ability of the students. Most of the students must be "carried along" with discussion.
4. Do not call on volunteers exclusively. Students soon learn to sit quietly and not to prepare. Using volunteers too much of the time encourages inattentiveness, while the control of the class falls into the hands of a few dominate students.
5. Give the unresponsive and timid students questions they can answer. By doing so, teachers teach more than subject matter, but also assertiveness and courage. (The research seems to indicate that teachers randomly ask low-ability students fewer questions than of higher-ability students. Further, teachers tend to give higher-ability students more time to think and respond.)
6. Eliminate guessing, since this habit requires "no" thinking and is rarely productive. It encourages physical activity without mental activity.
7. Make each question as clear as possible the first time it is presented. When students know that the teacher will probably repeat the question, they learn not to listen. Furthermore, unclear questions confuse the students and contribute to general inattention.

8. Be supportive and accepting of honest attempts of students to find proper answers, and never embarrass, intimidate, "put-down" or use caustic language.
9. Listen to each student's answer. Let each respondent complete his short speech, even though the response is trite, of little value, and the teacher can say it better.
10. Maintain a positive attitude. Ask questions with genuine sincerity, honesty, and confidence. Never be superior, haughty, beligerent, egotistical, or arrogant. The conversational approach is more apt to bring the desired results.
11. Acknowledge every serious response with positive action, that is, recognize the answer, and appreciate it.
12. If an incorrect answer is given, restructure the question and assist the student to a face-saving response.[8]
13. When a student gives the wrong answer, it may be that his perception is different from that of others. An after-class discussion may determine that the student had a justifiable response.
14. Vary the kinds of questions employed from concrete and factual to conceptual and contextual.
15. Promote critical and evaluative thinking over simple recall of memorized material. Note this example:

    Who was the main character in the story?

    or better

    What made this character the dominate personality in the story?

Following are recommendations or suggestions for improving the use of questions in the classroom. Some of these guidelines are clearly full-fledged rules under certain circumstances and with some teachers:

RECOMMENDATIONS:

1. Use open-ended questions, since they require more thought.

   Note these contrasting questions:

   Who founded the first Laboratory School?
   or
   Why did Dewey found his laboratory school?

2. State the question first, and then name the student who is to answer. When the teacher calls the student's name first, that notifies others in the classroom to direct their attention and interest elsewhere.
3. Wait at least three seconds for a response from the student chosen to answer. This allows time for the entire class to think, but it does not rule out adding clarifying statements.
4. The teacher should guard against being drawn into a dialogue with one student to the exclusion of the others.
5. Seek to build a structure of knowledge upon what has already been said in the discussion. This often involves taking what one student has offered and "relaying" it to another--a relay question- answer approach. On occasion it may be fruitful to tie several student responses together to answer one major question. In the same connection, the teacher may even quote one student to another and strengthen the relay.
6. Teachers should not answer their own questions. It would be better to try "brainstorming" instead.[9]
7. Arrange students' desks so that they have eye contact with each other. This encourages participation.
8. The teacher also should maintain eye contact with the students, since this practice helps in keeping their attention.

9. Questioning sessions are more effective at some hours of the day than others. The worst times may be directly after lunch or in the late afternoon.
10. Aristotle's practice of walking around while talking, that is, being "peripatetic," increases and holds students' attention.
11. Teachers should not repeat students' responses unless absolutely necessary. A better practice is to have the students restate their own responses and, also, to explain them if necessary.
12. Eliminate "yes" and "no" answers, since such responses may demand no thought at all.[10]
13. Teachers should ask questions that have multiple answers. Note this example:

    Why do we have nonpublic institutions of learning in the United States?

14. The evidence is that oral questions are much more effective than written ones.

III. The Classification of Teachers' Questions

In order for teachers to choose and use questions properly, the various types of questions must first be organized into some sort of classification system. One simple system based on the "target" of the questions has been developed by Ron C. DeYoung and Michael Glenn.[11] The three types of questions were:

1. The "Collective" question which is one directed to the entire class of students and to which anyone may be expected to respond. The purpose of such a question is to stimulate thought and discussion.
2. The "Direct" question is one posed for the entire class to consider, but it is directed to one particular student for a response.

3. The "Rhetorical" question is one posed for the entire class, but no response is expected from anyone.

However, if the questions are classified by "Expected Response," DeYoung and Glenn suggest the following system:

1. Probing questions which require students to search for answers below the surface.
2. Axiomatic questions which require students to locate principles in place of definitions and to apply ideas rather than memorizing material.
3. Divergent questions are open-ended questions which demand creative thinking, the forming of hypotheses, and the reorganizing of pertinent factors.

A much more elaborate system of classification was developed by Rodney P. Riegle.[12] The first category is that of the "Interrogative Question" and it has five different types and eight sub-types. Following is the "Rhetorical Question" with three more sub-types, and finally the "Ambiguous Question" with two more sub-types. This system is so well developed and so elaborate as to make it an ideal outline for the academic study of classroom questions but much too complicated for any teacher to bear in mind for practical use every time teaching and questioning takes place in a classroom. Then what is the best system of classification available, one that a teacher can apply to daily lesson planning? In spite of a number of other attempts, the one in Bloom's Taxonomy of Educational Objectives,[13] Handbook I, can hardly be improved on.

Bloom lists six levels or kinds of thinking. They have been described as "hierarchical and cumulative." The higher levels of analysis, synthesis, and evaluation "...incorporate the lower levels of knowledge, comprehension, and application."[14]

Since most educators own copies of the volume edited by Benjamin Bloom, and almost everyone else has access to the volume, there is no need to restate that complete system here. But, in brief, it is as follows:

There are six major categories:

1. KNOWLEDGE-type questions which rely on memory and which have specific responses.
2. COMPREHENSION-type questions which make it necessary that the information be restructured and returned as a new form.
3. APPLICATION-type questions are those which are pragmatic in nature, since they require an application of the knowledge.
4. ANALYSIS-type questions require the respondent to recognize the arrangement of factors or elements and their relationship to each other.
5. SYNTHESIS-type questions are somewhat the opposite of analytic in that they assign the task of putting factors and elements together so that a structure emerges which was not previously visible.
6. EVALUATION-type questions ask the student to form judgments, both qualitative and quantitative in respect to accepted standards.

Conclusion:

Some research has been accomplished on the use of questions in classroom teaching but the amount is not extensive and many questions remain unanswered. For example:

1. Are questions as a means of learning equally effective regardless of the age of the students?
2. What differences are there with regard to subject areas?
3. Exactly how does a teacher move step-by-step with classroom questions in the process of probing for a definite response?

4. How does an instructor hold the attention of most of the class members while challenging the most able to think analytically, synthetically and evaluatively?

Finally, it should be stated that the best educated person is the one who still has many unanswered questions but is still searching, which is the current situation with regard to teaching by means of questions.

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